

Remarks

Claims 17--33 are now pending in this application. Claims 1-16 were previously canceled without prejudice. Claims 17 and 20 were previously amended and are further amended hereby. No new matter is being added.

Claim Rejections--35 USC 103

Claims 17, 19-25, and 31-32

Claims 17, 19-25, and 31-32 stand rejected under 35 USC 103(a) as being unpatentable over Pahl et al (USP 6,931,699) in view of Gupta et al (USP 5,955,659). This rejection is respectfully traversed in relation to the claims as now amended.

Amended claim 17 now recites as follows.

17. A surface acoustic wave (SAW) device sealed at the wafer level, the device comprising:
 an active area to be protected;
 an electrical contact area; and
 a lithographically-formed structure **hermetically sealing** at least the active area and leaving at least a portion of the electrical contact area exposed,
 wherein the lithographically-formed structure comprises a seal coating deposited over a sacrificial material, said sacrificial material being subsequently removed by etching.

(Emphasis added.)

As seen above, claim 17 requires a SAW device including "a lithographically-formed structure **hermetically sealing** at least the active area ... wherein the lithographically-formed structure comprises a seal coating deposited over a sacrificial material" (Emphasis added.)

This aspect of the lithographically-formed structure hermetically sealing at least the active area is supported, for example, on page 11, lines 15-24 of the specification, which recites as follows.

As depicted in FIG. 1H, the chosen gas and pressure are then locked into the pocket that is now sealed 24. This advantageously provides a controlled atmosphere for the acoustically active portion of the device and protects that portion from undesirable contamination. **The sealed structure formed as described above should provide a hermetic seal. A hermetic seal is substantially airtight in that it substantially keeps air or gas from getting in or out. However, even for a hermetic seal, small gas molecules will pass through slowly over time through diffusion and permeation. The hermeticity of the seal can be substantially enhanced by coating it with a film of silicon nitride deposited using plasma-enhanced chemical vapor deposition (PECVD).**

(Emphasis added.)

As described above, "A hermetic seal is substantially airtight in that it substantially keeps air or gas from getting in or out."

In contrast, neither Pahl et al nor Gupta et al teach the above-discussed claim limitation.

In particular, the closest citation per the office action is to a "diaphragm" discussed in Gupta et al starting at column 7, line 56 and going to the next column. This citation is reproduced below.

The polysilicon layer 210 is then patterned to provide the desired flexible member as shown in FIG. 11d. The polysilicon layer 210 can be patterned using photolithography and etch steps to form the beam 201 of FIG. 7, the beam 211 of FIG. 8, the plate 221 of FIG. 9, or the diaphragm 231 of FIG. 10. **For the purposes of this discussion, the polysilicon layer is patterned to provide the diaphragm of FIG. 10.** This patterning step can also be used to simultaneously provide the holes 209 through the diaphragm thus exposing portions of the sacrificial layer 208.

A wet etch can then be used to remove the sacrificial layer 208 thus providing a gap between the diaphragm 231 and the first electrode 207. Portions of the sacrificial layer will also be exposed if the polysilicon layer is patterned into the beams of FIGS. 7 or 8, or the plate of FIG. 9. With these structures, the etch step will thus provide a gap between the flexible member and the first electrode.

(Emphasis added.)

As seen above, the citation to Gupta et al discloses patterning the polysilicon layer 230 to create a flexible diaphragm 231.

Applicants respectfully submit that **the flexible diaphragm 231 of Gupta et al is too thin to comprise a hermetically sealing structure**. For at least this reason, applicants respectfully submit that amended claim 17 now overcomes this rejection.

Claims 19, 25, 31 and 32 depend from amended claim 17. As such, applicants respectfully submit that claims 19, 25, 31 and 32 are now patentably distinguished over the cited art for at least the same reasons as discussed above in relation to claim 17.

Claim 20 is amended similarly as claim 17 and now recites as follows.

20. A lithographically-fabricated surface acoustic wave (SAW) device, the SAW device comprising:
 means for carrying a surface acoustic wave; and
 a wafer-level means for **hermetically sealing** the means for carrying the surface acoustic wave,
 wherein said wafer-level means for sealing comprises a seal coating deposited over a sacrificial material, said sacrificial material being subsequently removed by etching

(Emphasis added.)

Similar to claim 17, amended claim 20 requires a lithographically-fabricated SAW device including “a wafer-level means for **hermetically sealing** the means for carrying the surface acoustic wave, wherein said wafer-level means for sealing comprises a seal coating deposited over a sacrificial material” (Emphasis added.)

Similar to the above discussion in relation to claim 17, applicants respectfully submit that **the flexible diaphragm 231 of Gupta et al is too thin to comprise the “wafer-level means for hermetically sealing” of amended claim 20**. For at least this reason, applicants respectfully submit that claim 20 now overcomes this rejection.

Claims 21-24 depend from amended claim 20. As such, applicants respectfully submit that claims 21-24 are now patentably distinguished over the cited art for at least the same reasons as discussed above in relation to claim 20.

Claims 18, 26-28, and 33

Claims 18, 26-28 and 33 stand rejected under 35 USC 103(a) as being unpatentable over Pahl et al in view of Gupta et al in further view of Onishi et al. This rejection is respectfully traversed in relation to the claims as now amended.

As discussed above, amended claim 17 is now patentably distinguished over Pahl et al in view of Gupta et al. Hence, for at least that reason, dependent claims 18, 26-28 and 33 are now also patentably distinguished over the cited combination.

Furthermore, Onishi et al is cited in relation to its disclosure in column 7, lines 43-51. This citation is reproduced below for convenience of reference.

... In this case, to prevent the chemical reaction between the two, **it is preferable that an inorganic thin film made of a stable material, such as a metallic film, or an inorganic thin film made of silicon oxide, silicon nitride or the like is formed** as an isolation layer 9 outside the cover 5b as shown in FIG. 5. A metallic isolation layer 9 is a film made of gold, aluminum, nickel, titanium or other metal, a multilayer film or an alloy film.

As the method of forming the metallic isolation layer 9 on the external surface of the cover 5b, a physical forming method by vapor phase deposition, such as the vacuum deposition method, the sputtering method or the ion plating method is preferably used widely....

(Emphasis added.)

As seen above, the citation to Onishi et al recites an “inorganic thin film”, such as a “metallic film”, or “an inorganic thin film made of silicon oxide, silicon nitride, or the like.” The citation does not teach a “glassy material” as recited in claim 18, but rather. Hence, applicants submit that this is a further reason that claim 18 is patentably distinguished over the cited art.

Claims 29 and 30

Claim 29 stands rejected as being unpatentable over Pahl et al in view of Gupta et al in further view of Bashir et al. Claim 30 stands rejected as being unpatentable over Pahl et al in view of Gupta et al in further view of Orcutt et al. These rejections are respectfully traversed in relation to the claims as now amended.

As discussed above, amended claim 17 is now patentably distinguished over Pahl et al in view of Gupta et al. Hence, for at least that reason, dependent claims 29 and 30 are now also patentably distinguished over the cited combinations.

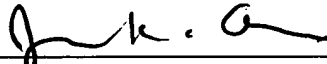
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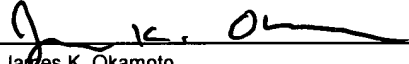
Favorable action is respectfully requested. The examiner is also invited to call the below-referenced attorney to discuss this case.

Respectfully Submitted,

Dated: February 15, 2007

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